Consumers [redacted] Water Company
Indicated Common Equity Cost Rate Through Use of the
Quarterly Version of the Discounted Cash Flow Model (1)
for the Proxy Group of Seven C. A. Turner Water Companies and the
Proxy Group of Thirteen Utilities Selected on the Basis of Least Relative Distance

	Based upon Historical and Projected Growth in DPS, EPS, and BR+SV (2)				
	Based upon Spot Closing Market Prices at April 30, 2003	Based Upon an Average of Closing Market Prices for Last 3 Months (3)	Based Upon an Average of Closing Market Prices for Last 6 Months (3)	Based Upon an Average of Closing Market Prices for Last 12 Months (3)	Average
Proxy Group of Seven C. A. Turner Water Companies					
American States Water Co.	7.2 %	7.4 %	7.5 %	7.4 %	7.4 %
Artesian Resources Corp.	10.4	10.6	10.7	10.8	10.6
California Water Service Group	9.7	9.9	10.0	10.0	9.9
Middlesex Water Company	9.1	9.2	9.2	9.0	9.1
Philadelphia Suburban Corp.	11.8	11.9	12.0	12.0	11.9
Southwest Water Company	11.2	11.2	11.1	10.9	11.1
York Water Company	7.2	7.5	7.7	7.6	7.5
Average	9.5 %	9.7 %	9.7 %	9.7 %	9.6 %
Proxy Group of Thirteen Utilities Selected on the Basis of Least Relative Distance					
AGL Resources, Inc.	9.6 %	10.0 %	10.0 %	10.1 %	9.9 %
American States Water Co.	7.2	7.4	7.5	7.4	7.4
California Water Service Group	9.7	9.9	10.0	10.0	9.9
Cleco Corporation	11.3	12.3	12.1	11.1	11.7
DPL Inc.	12.4	13.0	12.4	11.1	12.2
Middlesex Water Company	9.1	9.2	9.2	9.0	9.1
Northwest Natural Gas Co.	8.6	8.7	8.6	8.3	8.6
Philadelphia Suburban Corp.	11.8	11.9	12.0	12.0	11.9
Public Service Enterprise Group, Inc.	10.6	11.0	11.3	11.2	11.0
Southern Company	8.9	9.0	9.1	9.1	9.0
TECO Energy, Inc.	13.3	13.2	12.0	10.4	12.2
WPS Resources Corporation	9.6	9.7	9.8	9.8	9.7
York Water Company	7.2	7.5	7.7	7.6	7.5
Average	9.9 %	10.2 %	10.1 %	9.8 %	10.0 %

See page 2 for notes.

Consumers Illinois Water Company
Indicated Common Equity Cost Rate Through Use of the
Quarterly Version of the Discounted Cash Flow Model (1)
for the Proxy Group of Seven C. A. Turner Water Companies and the
Proxy Group of Thirteen Utilities Selected on the Basis of Least Relative Distance

	Based upon Projected Growth in EPS (6)				
	Based upon Spot Closing Market Prices at April 30, 2003	Based Upon an Average of Closing Market Prices for Last 3 Months (3)	Based Upon an Average of Closing Market Prices for Last 6 Months (3)	Based Upon an Average of Closing Market Prices for Last 12 Months (3)	Average
Proxy Group of Seven C. A. Turner Water Companies					
American States Water Co.	8.5 %	8.7 %	8.6 %	8.7 %	8.6 %
Artesian Resources Corp.	11.3	11.4	11.5	11.7	11.5
California Water Service Group	10.3	10.5	10.6	10.7	10.5
Middlesex Water Company	11.1	11.1	11.1	11.0	11.1
Philadelphia Suburban Corp.	12.3	12.4	12.5	12.5	12.4
Southwest Water Company	11.1	11.1	11.0	10.8	11.0
York Water Company	10.1	10.4	10.6	10.5	10.4
Average	10.7 %	10.8 %	10.8 %	10.8 %	10.8 %
Proxy Group of Thirteen Utilities Selected on the Basis of Least Relative Distance					
AGL Resources, Inc.	11.6 %	12.0 %	12.0 %	12.1 %	11.9 %
American States Water Co.	8.5	8.7	8.6	8.7	8.6
California Water Service Group	10.3	10.5	10.6	10.7	10.5
Cleco Corporation	13.4	14.5	14.3	13.3	13.9
DPL Inc.	13.1	13.7	13.1	11.8	12.9
Middlesex Water Company	11.1	11.1	11.1	11.0	11.1
Northwest Natural Gas Co.	10.7	10.9	10.8	10.6	10.7
Philadelphia Suburban Corp.	12.3	12.4	12.5	12.5	12.4
Public Service Enterprise Group, Inc.	10.5	10.8	11.2	11.1	10.9
Southern Company	10.7	10.8	10.9	10.9	10.8
TECO Energy, Inc.	12.6	12.6	11.3	9.7	11.6
WPS Resources Corporation	11.0	11.2	11.3	11.3	11.2
York Water Company	10.1	10.4	10.6	10.5	10.4
Average	11.2 %	11.5 %	11.4 %	11.1 %	11.0 %
Conclusion					
Proxy Group of Seven C. A. Turner Water Companies	10.1 %	10.3 %	10.3 %	10.3 %	10.2 %
Proxy Group of Thirteen Utilities Selected on the Basis of Least Relative Distance	10.6 %	10.9 %	10.8 %	10.5 %	10.5 %

Notes: (1) See Equation (7-2) on page 5 of this Schedule.

(2) Calculated using historical and projected growth in DPS, EPS, and BR+SV for each company calculated from the individual growth rates shown on page 1 of Schedule 12 of this Exhibit in a manner identical to the conclusion of growth for each proxy group shown in column 9 on page 1 of Schedule 12 of this Exhibit.

(3) The average 3-month closing market price is based upon the market price on the last trading day of each of the three months ended April 30, 2003.

(4) The average 6-month closing market price is based upon the market price on the last trading day of each of the six months ended April 30, 2003.

(5) The average 12-month closing market price is based upon the market price on the last trading day of each of the twelve months ended April 30, 2003.

(6) Calculated using the average projected five year growth rate in EPS from column 7 on page 1 of Schedule 12 of this Schedule.

REGULATORY FINANCE:

UTILITIES' COST OF CAPITAL

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1994
PUBLIC UTILITIES REPORTS, INC.
Arlington, Virginia

Chapter 7
Alternative DCF Models

7.1 The Quarterly DCF Model

The standard annual form of the DCF model:

$$K = D_1/P_0 + g$$

assumes an annual dividend payment, a yearly increase in dividends starting exactly one year from the present, a constant rate of dividend growth, and a stock price P_0 that is determined on a dividend payment date. But because dividends are normally paid quarterly, the investor's required return should be assessed with a DCF model that recognizes quarterly payments.

It is a rudimentary tenet of security valuation theory discussed in Chapter 4 that when determining investor return requirements, the cost of equity is the discount rate that equates the present value of future cash receipts to the observed market price. Clearly, given that dividends are paid quarterly and given that the observed stock price reflects the quarterly nature of dividend payments, the market required return must recognize quarterly compounding, for the investor receives dividend checks and reinvests the proceeds on a quarterly schedule. Perforce, a stock that pays 4 quarterly dividends of one dollar commands a higher price than a stock that pays a 4-dollar dividend a year hence. Since investors are aware of the quarterly timing of dividend payments and since the stock price already fully reflects the quarterly payment of dividends, it is essential that the DCF model used to estimate equity costs also reflect the actual timing of quarterly dividends.

The traditional annual DCF model is based on the limiting assumptions that dividends are paid annually, and that dividends increase once a year starting exactly one year from the present. These assumptions are unnecessarily restrictive. Most companies, including utilities, in fact pay dividends on a quarterly basis. The quarterly DCF model discussed in subsequent sections of this chapter rests on the exact same assumptions as the annual DCF model except that the DCF model is refined to reflect the actual corporate practice of paying dividends quarterly rather than once a year. The quarterly version of the DCF model also assumes that the dividend rate is raised once a year instead of every quarter.

As both a practical and theoretical matter, stock yield calculations must be adjusted for the receipt of cash flows on a quarterly basis. The annual DCF

model inherently produces incorrect results because it assumes that all cash flows received by investors are paid annually. By analogy, a bank rate on deposits that does not take into consideration the timing of the interest payments understates the true yield if the customer receives the interest payments more than once a year. The actual yield will exceed the stated nominal rate. Bond yield calculations are also routinely adjusted for the receipts of semi-annual interest payments. What is true for bank deposits and for bonds is equally germane for common stocks.

Most, if not all, finance textbooks discuss frequency of compounding in computing the yield on a financial security. The handbooks that accompany popular financial calculators used almost universally by the financial community contain abundant directions with respect to frequency of compounding.

Appendix 7-A formally derives the quarterly DCF model, which has the following form:

$$K = \frac{[D_1 (1+K)^{3/4} + D_2 (1+K)^{1/2} + D_3 (1+K)^{1/4} + D_4]}{P_0} + g \qquad (7\text{-}1)$$

where D_1, D_2, D_3, D_4 = quarterly dividends expected over the coming year

g = expected growth in dividends

P_0 = current stock price

K = required return on equity

Equation 7-1 must be solved by iteration because K appears on both sides of the equation. Note that an even more general form of the quarterly DCF model can be derived for the case where the stock price is not determined on a dividend payment date. If we let f_1, f_2, f_3, and f_4 denote the fraction of the year before the quarterly dividends are received, Equation 7-1 becomes:

$$K = \frac{[D_1 (1+K)^{1-f_1} + D_2 (1+K)^{1-f_2} + D_3 (1+K)^{1-f_3} + D_4 (1+K)^{1-f_4}]}{P_0} + g \qquad (7\text{-}2)$$

In the special case where the stock price happens to be determined on a dividend payment date, f_1, f_2, f_3, and f_4 are equal to 0.25, 0.50, 0.75 and 1.00 and Equation 7-2 reduces back to Equation 7-1.

The two-stage non-constant growth DCF model described in Chapter 4 has a quarterly counterpart:

$$P_0 = \frac{D_1(1+g)}{(1+K)^{0.25}} + \frac{D_2(1+g)}{(1+K)^{0.50}} + \frac{D_3(1+g)}{(1+K)^{0.75}} + \frac{D_3(1+g)}{(1+K)^{1.00}} + \frac{D_1(1+g)^2}{(1+K)^{1.25}} + \frac{D_2(1+g)^2}{(1+K)^{1.50}} + \frac{D_3(1+g)^2}{(1+K)^{1.75}} + \frac{D_3(1+g)^2}{(1+K)^{2.00}} + \frac{P_2}{(1+K)^{2.00}} \quad (7\text{-}3)$$

The symbol g represents the first stage growth rate while P_2 represents the stock price in period 2 that is obtained by applying the quarterly DCF model using the second-stage growth rate.

Intuitively, the quarterly form of the DCF model described by Equation 7-1 resembles the standard annual form, but with a slightly modified dividend yield component. Letting $D_1' = D_1(1+K)^{3/4} + D_2(1+K)^{1/2} + D_3(1+K)^{1/4} + D_4$ in Equation 7-1, the quarterly DCF equation becomes:

$$K = D_1'/P_0 + g \quad (7\text{-}4)$$

which is very similar to the annual version. One can think of the D_1' term as an augmented D_1 term that simply captures the added time value of money associated with investors receiving successive quarterly dividends and reinvesting them over the remainder of the year at K%. That is to say, during the course of one year, the investor has the value of the first quarter's dividend for 3/4 of the year; the second quarter dividend for 1/2 of the year; the third quarter dividend for 1/4 of the year, and the fourth quarter dividend is received at the end of the year. The following illustration shows how to implement the quarterly DCF model and estimate the investor's required market return.

EXAMPLE 7-1

The common stock of Consolidated Natural Gas (CNG) is trading at $52.13. The dividend is expected to increase annually at a constant rate of 8.8%. The current quarterly dividend rate is $0.48 and has been in effect for two quarters. Thus, an investor buying CNG stock expects to receive, in the next year, two more dividends at the existing rate of $0.48 and two dividends at the new rate of $0.48(1 + g). The cost of equity capital is obtained by solving iteratively the quarterly version of the DCF model in Equation 7-1 by means of a computer spreadsheet. To solve that equation, the following input data for CNG:

$D_1 = \$0.48$

$D_2 = \$0.48$

$D_3 = \$0.48\ (1 + .0880) = \$0.52$

$D_4 = \$0.48\ (1 + .0880) = \$0.52$

$P_0 = \$52.13$

$g = 8.80\%$

are substituted into Equation 7-1 as follows:

$$K = \frac{[0.48\ (1 + K)^{3/4} + 0.48\ (1 + K)^{1/2} + 0.52\ (1 + K)^{1/4} + 0.52]}{\$52.13} + .0880$$

The equation is solved iteratively by successive approximations for K_e, the cost of equity. Here, $K_e = 12.82\%$.

Note that the annual DCF model produces an estimate of 12.64%, which is less than the 12.82% estimate derived from the quarterly DCF model.

$$K = D_1/P_0 + g = \$2.00/\$52.13 + .088 = 12.64\%$$

The difference is attributable to the time value of money associated with receiving quarterly dividends. The annual version of the DCF model typically understates the cost of equity by approximately 30-40 basis points, depending on the magnitude of the dividend yield component.

The cost of equity capital estimate of 12.82% should be translated into a fair return on equity by allowing for a 5% flotation costs factor. This is accomplished by dividing the dividend yield component of the cost of equity figure by 0.95 to produce a fair DCF rate of return on equity of 13.03%.

7.2 Other Alternative DCF Models

Other alternative functional forms of the DCF model are available but are largely unrealistic and/or theoretically incorrect. The continuous compounding DCF model, for example, is developed assuming that dividends are paid continuously rather than at discrete time intervals.[1] Clearly, this model does not reflect reality, any more than does the annual DCF model, which assumes that dividends are paid once a year at the end of the year. The continuous DCF model has the following form:

$$K_c = D_0/P_0 + g \qquad (7\text{-}5)$$

where K_c = investor's expected return from the continuous DCF model

D_0 = annual per share dividend at time 0, i.e., current dividend

Another DCF model sometimes used by analysts, notably by the Federal Energy Regulatory Commission in its determination of the electric utility industry's generic rate of return on equity before 1993, lies halfway between the continuous and annual forms of the DCF model:

$$K_{ad\ hoc} = D_0 (1 + 0.5G)/P_0 + g \qquad (7\text{-}6)$$

where $K_{ad\ hoc}$ = investor's expected return from the ad hoc DCF model

This "ad hoc" DCF model is based on the arbitrary assumption that the firm is halfway into its quarterly dividend cycle and assigns half a year's growth to the dividend. Of course, the model does not reflect reality and is arbitrary in nature. Only the quarterly compounding DCF model reflects reality, is theoretically correct, and is computationally tractable.

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1 The effective return under continuous compounding is computed with the following formula:

$$K_c = \frac{D_0 [K_c/\ln (1 + k_e)] + g}{P_0}$$

Exhibit No. 3
Schedule 10

Consumers Illinois Water Company
Derivation of Dividend Yield for Use in the
Discounted Cash Flow Model

	Dividend Yield				
	Spot (04/30/03) (1)	Average of Last 3 Months (2)	Average of Last 6 Months (3)	Average of Last 12 Months (4)	Average Dividend Yield (5)
Proxy Group of Seven C. A. Turner Water Companies					
American States Water Co.	3.4 %	3.6 %	3.7 %	3.6 %	3.6 %
Artesian Resources Corp.	3.7	3.8	3.9	4.0	3.9
California Water Service Group	4.1	4.3	4.4	4.5	4.3
Middlesex Water Company	3.8	3.9	3.9	3.7	3.8
Philadelphia Suburban Corp.	2.5	2.6	2.7	2.7	2.6
Southwest Water Company	1.9	1.9	1.8	1.6	1.8
York Water Company	2.8	3.1	3.3	3.2	3.1
Average	3.2 %	3.3 %	3.4 %	3.3 %	3.3 %
Proxy Group of *Thirteen Utilities* Selected on the Basis of Least Relative Distance					
AGL Resources, Inc.	4.4 %	4.6 %	4.6 %	4.6 %	4.6 %
American States Water Co.	3.4	3.6	3.7	3.6	3.6
California Water Service Group	4.1	4.3	4.4	4.5	4.3
Cleco Corporation	6.0	7.0	6.8	6.1	6.5
DPL Inc.	6.8	7.4	6.8	5.9	6.7
Middlesex Water Company	3.8	3.9	3.9	3.7	3.8
Northwest Natural Gas Co.	4.9	5.0	4.9	4.6	4.9
Philadelphia Suburban Corp.	2.5	2.6	2.7	2.7	2.6
Public Service Enterprise Group, Inc.	5.6	5.9	6.3	6.2	6.0
Southern Company	4.7	4.8	4.9	4.8	4.8
TECO Energy, Inc.	7.0	11.1	10.4	8.8	9.3
WPS Resources Corporation	5.3	5.4	5.5	5.6	5.5
York Water Company	2.8	3.1	3.3	3.2	3.1
Average	4.7 %	5.3 %	5.2 %	4.9 %	5.1 %

Notes:
(1) The spot dividend yield is the current annualized dividend per share divided by the spot market price on 04/30/03.
(2) The average 3-month dividend yield was computed by relating the indicated annualized dividend rate and market price on the last trading day of each of the three months ended April 30, 2003.
(3) The average 6-month dividend yield was computed by relating the indicated annualized dividend rate and market price on the last trading day of each of the six months ended April 30, 2003.
(4) The average 12-month dividend yield was computed by relating the indicated annualized dividend rate and market price on the last trading day of each of the twelve months ended April 30, 2003.
(5) Equal weight has been given to the 12-month average, 6-month average, 3-month average and spot dividend yield. This provides recognition of current conditions, but does not place *undue emphasis thereon*.

Source of Information: Standard & Poor's Compustat Services, Inc., PC Plus Research Insight Database
finance.yahoo.com

Exhibit No. 3
Schedule 11

Consumers Illinois Water Company
Current Institutional Holdings (1) and Individual Holdings (2) for
the Proxy Group of Seven C. A. Turner Water Companies and
the Proxy Group of Thirteen Utilities Selected on the Basis of Least Relative Distance

	1 April 2003 Percentage of Institutional Holdings (1)	2 April 2003 Percentage of Individual Holdings (2)
Proxy Group of Seven C. A. Turner Water Companies		
American States Water Co.	35.2 %	64.8 %
Artesian Resources Corp.	7.5	92.5
California Water Service Group	18.8	81.2
Middlesex Water Company	14.9	85.1
Philadelphia Suburban Corp.	34.6	65.4
Southwest Water Company	19.3	80.7
York Water Company	9.0	91.0
Average	19.9 %	80.1 %
Proxy Group of Thirteen Utilities Selected on the Basis of Least Relative Distance		
AGL Resources, Inc.	46.9 %	53.1 %
American States Water Co.	35.2	64.8
California Water Service Group	18.8	81.2
Cleco Corporation	57.3	42.7
DPL Inc.	37.1	62.9
Middlesex Water Company	14.9	85.1
Northwest Natural Gas Co.	41.0	59.0
Philadelphia Suburban Corp.	34.6	65.4
Public Service Enterprise Group, Inc.	50.9	49.1
Southern Company	35.5	64.5
TECO Energy, Inc.	41.3	58.7
WPS Resources Corporation	34.9	65.1
York Water Company	9.0	91.0
Average	35.2 %	64.8 %

Notes: (1) The percentage of institutional holdings is calculated by dividing the number of shares held by institutions by the number of shares outstanding.

(2) (1 - column 1).

Source of Information: yahoo.multexinvestor.com